AK Steel Corporation
MIDDLETOWN WORKS
1801 CRAWFORD STREET
MIDDLETOWN, OHIO 45043-0001

October 12, 2018

Ms. Kerri Castlen
Permits and Enforcement Assistant Section Manager
Southwest Ohio Air Quality Agency
250 William Howard Taft Road
Cincinnati, Ohio 45219

RE: Middletown Works – Response to Notice of Violation

Dear Ms. Castlen:

AK Steel is in receipt of the Notice of Violation (NOV) regarding AK Steel Corporation's Middletown Works, dated September 13, 2018. Following is AK Steel's response to the NOV, including the requested compliance plans.

1. Alleged Oven Door Exceedances

SWOAQA alleges that AK Steel violated the visible particulate matter standard for coke battery oven doors. The alleged violation is based on observations by U.S. EPA on May 8, 2018 and May 23, 2018. Based on U.S. EPA's inspection report, AK Steel questions whether U.S. EPA employed the proper methodology for observing visible particulate matter from coke battery oven doors.

First, the methodology for reading coke oven doors in conjunction with the state visible particulate emission standard requires that the observer "traverse each side of the battery expeditiously." OAC 3745-17-03(B)(2)(c). For the May 8 inspection, U.S. EPA observed the pusher-side doors (oven doors 1-67) from 12:30PM to 12:48PM. In AK Steel's opinion, this 18-minute period to observe the pusher-side doors significantly exceeds the "expeditious" pace required by the regulations. In AK Steel's experience, an "expeditious" pace would mean observing the same number of doors and notating leaks in no more than 7.5 minutes.

Note that U.S. EPA's pace appeared to be acceptable on an earlier observation of the pusher-side doors on that same day, when the inspectors observed doors 1-42 from 10:43AM to 10:47AM. That observation demonstrated compliance with the oven door standard with a calculated leak rate of 9.2%.

Second, the methodology contemplates observing the oven doors in order as the observer traverses each side of the battery. However, based on the inspection report for the May 8 inspection, it appears as though U.S. EPA backtracked while observing the oven doors. U.S. EPA documented a leak on oven door 70, then observed oven doors 72, 69, 68, and 64, before returning to oven door 71. The times documented for the observations are

12:49, 12:50, 12:50, 12:50, 12:52, and 12:52, respectively. This is contrary to the methodology.

Finally, on both inspections, U.S. EPA's records do not appear to contain accurate descriptions of the time. It takes approximately 5 to 10 minutes to proceed from the pusher-side of the battery to the coke-side of the battery. However, for the May 8 inspection, U.S. EPA inspection records indicate that pusher-side oven door 67 was observed at 12:48PM and the next door observed was coke-side oven door 70 at 12:49PM, only one minute later. For the May 23 inspection, U.S. EPA inspection records indicate that pusher-side oven door #63 was observed at 10:44AM and the next door observed was coke-side oven door #76 at 10:46AM, only two minutes later. These times do not seem accurate, thus AK Steel questions whether there may have been other inaccuracies in recording the data.

Based on this assessment, AK Steel has considerable concern over the validity of U.S. EPA's observations of the coke oven doors. However, as noted in the NOV, SWOAQA has not requested any follow-up information on this issue due to the fact that AK Steel has entered into Interim Director's Findings and Orders that address alleged coke oven battery door leaks. Therefore, it does not appear that any resolution on these methodology issues is necessary at this time.

2. Alleged Offtake Piping Exceedances

SWOAQA alleges that AK Steel violated the visible particulate matter standard for coke battery offtake piping. The alleged violation is based on observations by U.S. EPA on May 8, 2018 and May 23, 2018. Based on U.S. EPA's inspection report, AK Steel questions whether U.S. EPA employed the proper methodology for observing visible particulate matter from coke battery offtake piping.

As with coke oven door observations, the methodology for offtake piping observations in conjunction with the state visible particulate emission standard requires that the observer "complete the inspection in an expeditious manner." OAC 3745-17-03(B)(2)(b). For the May 8 inspection, U.S. EPA's observed offtake piping from 11:00AM to 11:18AM, for a total of 18 minutes. In the May 23 inspection, U.S. EPA observed offtake piping from 11:05AM to 11:55AM, for a total of 50 minutes. In AK Steel's experience, an "expeditious manner" for observations of offtake piping and noting leaks should take no more than 13.5 minutes.

Notwithstanding AK Steel's concerns about U.S. EPA's methodology for the offtake piping observations, AK Steel has nonetheless implemented several action items. These action items are as follow, and constitute the "compliance plan" required by the NOV:

- Main Cleaning: As identified to Ohio EPA in conjunction with the short-term benzene reduction corrective action under the Interim Director's Findings and

Order, AK Steel has started cleaning out the collector main on the suction side once per month to ensure coke oven gas from the battery is properly evacuated. The frequency will be adjusted as needed. This action helps to minimize offtake piping leaks.

- Enhanced Training: AK Steel is in the process of developing new training materials to more effectively convey the appropriate methods for minimizing emissions on the battery top.

3. Alleged Charging Exceedances

SWOAQA alleges that AK Steel violated the visible particulate matter standard for coke battery charging. The alleged violation is based on observations by U.S. EPA on May 24, 2018. Based on U.S. EPA's inspection report, AK Steel questions whether U.S. EPA employed the proper methodology for observing visible particulate matter from coke battery charging.

The methodology for charging operations states that visible particulate emissions from closed standpipe and from door leaks observed during charging are not timed. OAC 3745-17-03(B)(2)(a). For the May 24 inspection, U.S. EPA observed six charges (ovens 6, 8, 10, 12, 14, 16). The charge emissions on oven 10 as reported by U.S. EPA were 44 seconds, compared to the observations reported by AK Steel's contractor of 2.5 seconds. U.S. EPA indicates in the inspection report that the discrepancy was due to the inspector reading standpipe emissions as part of the charge. At the time of the inspection, AK Steel and its contractor indicated the standpipe cap was closed, which is AK Steel's practice otherwise it would allow raw COG from the collecting main to vent to atmosphere. AK Steel noted that the emissions were originating from a door leak below. Properly excluding these emissions, the charging observation would have demonstrated compliance.

Notwithstanding AK Steel's concerns about U.S. EPA's methodology for the charging observations, AK Steel has nonetheless implemented several action items. These action items are as follow, and constitute the "compliance plan" required by the NOV:

- Installation of Soft Sealed Boot Equipment: In charging an oven with coal, the charging machine aligns itself with the three charging holes for an oven, and through extended pipes fills the oven with coal. Historically, in circumstances when the charging machine cannot sit flush with the battery top, personnel would pile coal around the charging pipe to minimize the escape of emissions. In July 2018, AK Steel installed soft sealed boot equipment on the charging machine. The new equipment results in the placement of a soft sealed "boot" that goes over the charging pipe. This provides better control for charging emissions.

- Main Cleaning: In addition to reducing offtake piping leaks, the cleaning of the main as noted above will also help to reduce charging emissions.

4. Alleged Blast Furnace Burden Slip Exceedances

SWOAQA alleges that AK Steel violated the particulate matter emissions standard for the blast furnace due to 27 burden slips. In conjunction with the December 2017 Consent Order, SWOAQA has requested that AK Steel update its Preventative Maintenance and Malfunction Abatement Plan (PMMAP) for the blast furnace.

As referenced in the Consent Order report for the second quarter of 2018, AK Steel identified three contributing factors for increased bleeder valve activity between April 1 and June 30. One of those factors was the introduction of an iron ore pellet trial.

Despite the due diligence performed by the Blast Furnace technical group, introducing a new pellet to the furnace is a hypothetical situation in which there could be some trial and error. Pellet chemistry can behave differently in the Blast Furnace than when examined in isolated experiments in lab environments due to the fact that the blast furnace environment and configuration cannot be fully replicated in the laboratory. It is important to note that when the Blast Furnace doesn't perform well environmentally, wind must be reduced, which reduces iron production. As such, AK Steel does not operate the furnace precipitously and, on the contrary, has a significant interest in correcting furnace instability.

As part of the investigation into why the operation was unstable during this time period, the Blast Furnace technical group has proposed a theory that the rate of slag generation may have an impact on and therefore, could be an indicator of, top pressure activity. Data compiled and analyzed by the Blast Furnace technical group during the supplemental iron pellet trial could indicate that as the amount of slag per ton of hot metal increases, the risk of top pressure activity increases. The Blast Furnace manages slag generation by monitoring base/acid ratios in the furnace and by charging fluxes and/or various gravels to achieve a desired slag chemistry and volume.

All other activities identified in Section E of the PMMAP have been implemented and will continue to be implemented as needed.

As a corrective action, the Blast Furnace technical group will be temporarily tracking slag generation to determine if the proposed theory may be valid. With respect to the requested revision to the PMMAP, AK Steel has added this portion of the NOV response as an addendum to the PMMAP. Please see the attached addendum.

Please note that the NOV incorrectly states that the stock of this trial pellet was depleted. That is incorrect. The stock of that pellet was depleted from the hopper bins at the blast furnace itself, but AK Steel continues to maintain possession of some quantity of that raw

material. However, as discussed in this response, based on the initial unsuccessful trial of that pellet, AK Steel is working to ensure that any future use of that pellet does not cause disruptions in the efficient operation of the blast furnace. In fact, this particular pellet was reintroduced to the furnace earlier this month without issue.

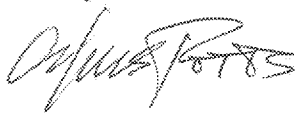
Finally, please note that as discussed in conjunction with the negotiation of the December 2017 Consent Order, AK Steel disagrees with the means in which the Blast Furnace bleeder emissions have been permitted and otherwise assessed by Ohio EPA. AK Steel is in the process of preparing a letter to Ohio EPA to more fully set forth its position. We intend to submit such letter in the very near term, and look forward to engaging with the agency on the proper way to address emissions from the Blast Furnace bleeders.

5. Alleged Quench TSD

AK Steel has acknowledged the exceedance of the TDS limit for quench water. SWOAQA has not requested further information on this item.

I trust this letter adequately responds to the information required by the NOV. Please let me know if you have any questions.

Sincerely,



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